The Magnetic Nonpotentiality of Solar Active Regions at the Beginning of Cycle 23

J.P. Dun et al.

Beijing Astronomical Observatory, China

Using a 1995-1998 data set of vector magnetograms at the Huairou Solar Observing Station of Beijing Astronomical Observatory, the magnetic field flux, shear angle, vertical currents and nonpotential energy of 280 active regions were calculated. The evolution of these parameters, their relationship, and the relationship between these parameters and solar activity were analyzed. The patterns of these parameters were studied too. The initial results as following: (1) By comparing with the monthly mean sunspot number and other solar activity indexes, we found that the magnetic field flux and nonpotential energy have a good correlation with solar activity. (2) The vetical currents and shear angle increase slightly from 1995 to 1998. (3) The distribution of these parameters has asymmetry between the hemispheres.

Co-auther: *H.Q. Zhang, B.R. Zhang, R.F. Li*